-- Fourteen (14) PAGES IN THIS FAX --

PATENT
Attorney Docket No. 42027

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
WILLIAMS ET AL.

Application No. 10/811,044

Confirmation No. 9536

Filed: March 27, 2004

For: Bypassing native storage operations by communicating protected data within locking messages using a lock manager independent of the storage mechanism

Group Art Unit: 2165

Examiner: HICKS, MICHAEL J

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this paper is being deposited with the United States Postal Service on the date shown with sufficient postage as first class mail in an envelope addressed to: Commissioner For Patents, PO Box 1450, Alexandria VA 22313-1450, or being facsimile transmitted to the USPTO, 571-273-8300, on October 3, 2006.

Kirk D. Williams, Esq. 10-3-2006

Transmittal of PCT Search Report and Written Opinion

Commissioner for Patents
Alexandria, VA 22313-1450

Dear Sir:

Enclosed herewith is a copy of a PCT search report and written opinion for an application claiming priority to the present application. At first glance, Search Report appears to be basically a reiteration of an Office action mailed in the present application, so the reference cited in the PCT search report was cited by the Office, so a copy is not being submitted herewith. Moreover, Applicants traverse the opinion presented therein for at least the reasons presented in response to the Office action.

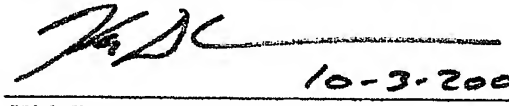
This submission of this search report should not be construed to be an admission that the information cited in the search report is, or is considered to be, material to patentability as defined in § 1.56(b). Additionally, the submission of this search report is for the purpose of providing a

complete record and is not a concession that the references are prior art to the invention claimed in the patent application. The right is expressly reserved to establish an invention date earlier than the above-identified filing date in order to remove any cited reference as prior art should it be deemed appropriate to do so. Furthermore, the submission of this search report is not to be taken as a concession that any reference cited therein represents art that is relevant or analogous to the claimed invention. Accordingly, the right to argue that any reference is not properly within the scope of prior art relevant to an examination of the claims in the above-identified application is also expressly reserved.

Although no fees are believed due in regards to this communication, the Commissioner is hereby authorized to charge any associated fees to Deposit Account No. 501430. Moreover, the Commissioner is hereby generally authorized under 37 C.F.R. § 1.136(a)(3) to treat this communication or any future communication in this or any related application filed pursuant to 37 C.F.R. § 1.53 requiring an extension of time as incorporating a request therefore, and the Commissioner is hereby specifically authorized to charge Deposit Account No. 501430 for any fee that may be due in connection with such a request for an extension of time. Moreover, the Commissioner is hereby authorized to charge payment of any fee due any under 37 C.F.R. §§ 1.16 and § 1.17 associated with this communication or any future communication in this or any related application filed pursuant to 37 C.F.R. § 1.53 or credit any overpayment to Deposit Account No. 501430.

Respectfully submitted,
The Law Office of Kirk D. Williams

Date: October 3, 2006

By  10-3-2006

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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
KIRK WILLIAMS
1234 S. OGDEN ST.
DENVER, CO 80210

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Applicant's or agent's file reference 42027-1	Date of mailing (*day/month/year*) FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date (*day/month/year*)	Priority date (*day/month/year*)
PCT/US05/06424	27 February 2005 (27.02.2005)	27 March 2004 (27.03.2004)

International Patent Classification (IPC) or both national classification and IPC
IPC: G06F 7/00(2006.01),17/30(2006.01)
USPC: 707/1,8

Applicant
CISCO TECHNOLOGY, INC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(*b*) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	22 June 2006 (22.06.2006)	Jeffrey Gaffin Telephone No. (571) 272-3608

Form PCT/ISA/237 (cover sheet) (April 2005)

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
KIRK WILLIAMS
1234 S. OGDEN ST.
DENVER, CO 80210

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing (*day/month/year*) 31 JUL 2006
Applicant's or agent's file reference 42027-1	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US05/06424	International filing date (*day/month/year*) 27 February 2005 (27.02.2005)
Applicant CISCO TECHNOLOGY, INC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70.

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☒ **With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:**

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☒ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Jeffrey Gaffin Telephone No. (571) 272-3608

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 42027-1	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US05/06424	International filing date (*day/month/year*) 27 February 2005 (27.02.2005)	(Earliest) Priority Date (*day/month/year*) 27 March 2004 (27.03.2004)
Applicant CISCO TECHNOLOGY, INC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the Report**
   a. With regard to the **language**, the international search was carried out on the basis of:
      ☒ the international application in the language in which it was filed.
      ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☐ **Certain claims were found unsearchable** (See Box No. II)
3. ☐ **Unity of invention is lacking** (See Box No. III)
4. With regard to the title,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,
   a. the figure of the drawings to be published with the abstract is Figure No. 2
      ☒ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/06424

A. CLASSIFICATION OF SUBJECT MATTER
IPC: G06F 7/00(2006.01),17/30(2006.01)

USPC: Please See Continuation Sheet
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
ACM, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	YUN et al., An Efficient Lock Protocal For Home-Based Lazy Release Consistency, Proceedings of the First IEEE/ACM International Symposium on Cluster Computing and the Grid. May 2001, pages 527-532, Espeecially Pages 528-530	1-26

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 June 2006 (22.06.2006)	31 JUL 2006
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Jeffrey Gaffin Telephone No. (571) 272-3608

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/06424

Continuation of B. FIELDS SEARCHED Item 1:
707/1,8

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
KIRK WILLIAMS
1234 S. OGDEN ST.
DENVER, CO 80210

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing (*day/month/year*)	31 JUL 2006
Applicant's or agent's file reference 42027-1	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date (*day/month/year*)	Priority date (*day/month/year*)
PCT/US05/06424	27 February 2005 (27.02.2005)	27 March 2004 (27.03.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC: G06F 7/00(2006.01),17/30(2005.01)
USPC: 707/1,8

Applicant

CISCO TECHNOLOGY, INC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I — Basis of the opinion
- ☐ Box No. II — Priority
- ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV — Lack of unity of invention
- ☒ Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI — Certain documents cited
- ☐ Box No. VII — Certain defects in the international application
- ☐ Box No. VIII — Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(*b*) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	22 June 2006 (22.06.2006)	Jeffrey Gaffin Telephone No. (571) 272-3608

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/06424

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ on paper

☐ in electronic form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in electronic form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Form PCT/ISA/237(Box No. I) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/06424

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims NONE	YES
	Claims 1-26	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-26	NO
Industrial applicability (IA)	Claims 1-26	YES
	Claims NONE	NO

2. Citations and explanations:

Please See Continuation Sheet

Form PCT/ISA/237 (Box No. V) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/US05/06424

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:

Claims 1-26 novelty under PCT Article 33(2) as being anticipated by Yun et al. ("An Efficient Locking Protocol for Home Based Lazy Release Consistency", Proceedings of the First IEEE/ACM International Symposium on Cluster Computing and The Grid, Pgs. 527-532; May 2001 and referred to hereinafter as Yun).

As per Claim 1, Yun discloses an apparatus for protecting data using locks (i.e. *"In this paper we present an efficient lock protocol for HLRC."* The preceding text excerpt clearly indicates that the apparatus protects data using locks.) (Abstract), the apparatus comprising: a lock manager configured to control access via a lock to protected data maintained in native storage independent of the lock manager (i.e. *"First, proper home assignment is hard due to migratory behavior of lock protected data."* The preceding text excerpt clearly indicates that a lock manager exists to control access to protected data via a lock, and that the lock protected data is migratory (e.g. it may reside in native storage which is independent of the lock manager).) (Page 528, Column 2, Paragraph 1), wherein the lock manager does not access said protected data from said native storage (i.e. *"We suggest a new lock protocol for HLRC. The main ideas of our protocol are as follows. : Releaser sends diffs for expected pages to be used by acquirer. When a page fault occurs in acquiring process, it applies received diffs for that page instead of fetching a whole page from the home. In this way, our protocol reduces page fault handling time and lock-waiting time."* The preceding text excerpt along with Figure 2 clearly indicates that only the processes requesting the locks gain access to the protected data, and the lock manager determines the order in which processes gain that access.) (Page 528, Column 2, Paragraph 3); and a plurality of requesters (See Figure 2, The plurality of requestor being P0, P1, and P2); wherein the lock manager is configured to receive lock requests for the lock from each of the plurality of requesters (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section."* The preceding text excerpt clearly indicates that processes (e.g. requestors) may request and acquire access to locks through the lock manager.) (Page 529, Paragraph 2), and to selectively grant said lock requests which includes communicating grants from the lock manager to the plurality of requesters (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the locks are selectively granted to the requestors (e.g. processes) and that the grant request are communicated to the acquiring processes.) (Page 529, Paragraph 3), wherein at least

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/06424

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

one of said communicated grants includes said protected data (i.e. *"Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the protected data (e.g. diffs) are included with the lock grant message.) (Page 529, Paragraph 3).

As per Claim 2, Yun discloses at least one of said communicated grants does not include said protected data (i.e. *"If it exceeds a page size, diffs for that page are not sent."* The preceding text excerpt clearly indicates that the grant message may not include the protected data (e.g. diffs) under certain conditions.) (Page 529, Paragraph 3).

As per Claim 3, Yun discloses each of said communicated grants includes an indication of whether or not said protected data is being communicated therewith (i.e. *"Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates the grant message that includes the protected data also includes write notices (e.g. indication of the protected data/diffs).) (Page 529, Paragraph 3).

As per Claim 4, Yun discloses each of said communicated grants includes an indication of whether or not said protected data is requested to be sent to the lock manager with a corresponding release of the lock (i.e. *"To make a page up-to-date only diffs are transferred while the whole page is transferred in base HLRC."* The preceding text excerpt along with Figure 2 clearly indicates that if no other processes are requesting the lock, that the protected data is written back to storage, rather than being forwarded to a next acquiring process. In order to make this determination and perform this operation, an indication of whether or not to forward the protected data would have to be included in the grant message.) (Figure 2; Page 530, Column 1, Paragraph 1).

As per Claim 5, Yun discloses each of said lock requests includes an indication of whether or not the corresponding one of the plurality of requesters will accept said protected data from the lock manager (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section."* The preceding text excerpt clearly indicates that the request includes an indication of what pages of the protected data will be needed by the requesting process. This will indicate whether the process will accept the current pages of the protected data from the lock manager.) (Page 529, Paragraph 2).

As per Claims 6, 8, and 10, Yun discloses a method performed by a lock manager, computer readable medium, and lock manager controlling access to protected data maintained in native storage independent of the lock manager (i.e. *"First, proper home assignment is hard due to migratory behavior of lock protected data."* The preceding text excerpt clearly indicates that a lock manager exists to control access to protected data via a lock, and that the lock protected data is migratory (e.g. it may reside in native storage which is independent of the lock manager).) (Page 528, Column 2, Paragraph 1), wherein the lock manager does not access said protected data from said native storage (i.e. *"We suggest a new lock protocol for HLRC. The main ideas of our protocol are as follows. : Releaser sends diffs for expected pages to be used by acquirer. When a page fault occurs in acquiring process, it applies received diffs for that page instead of fetching a whole page from the home. In this way, our protocol reduces page fault handling time and lock-waiting time."* The preceding text excerpt along with Figure 2 clearly indicates that only the processes requesting the locks gain access to the protected data, and the lock manager determines the order in which processes gain that access.) (Page 528, Column 2, Paragraph 3), the method comprising: receiving a release of a lock for use in controlling access to said protected data, the release including said protected data (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that a lock is released along with protected data (e.g. diffs).) (Page 529, Paragraph 3); identifying a next requester to be granted the lock in response to said receiving the release of the lock (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section...Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt clearly indicates that the next acquirer is identified upon release of the lock.) (Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3); copying said protected data from the release into a grant message (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the protected information (e.g. diffs) are included in the lock grant message.) (Page 529, Paragraph 3); and sending the grant message to the next requester, the grant message including said protected data (i.e. *"Releaser of that lock decides pages to send diffs based on the*

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/06424

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message." The preceding text excerpt clearly indicates that the protected information (e.g. diffs) are sent to the lock acquirer in the lock grant message.) (Page 529, Paragraph 3).

As per Claims 7, 9, and 11, Yun discloses the grant message includes an indication of that said protected data is requested to be sent to the lock manager in a release message corresponding to the grant message if another requester is waiting for the lock, else an indication that said protected data is not requested to be sent to the lock manager in the release message (i.e. The Figure 2 indicates that if another process is requesting the lock, the protected data is sent with the release and grant messages, but if no other process is requesting the lock then the data is stored (e.g. not sent to the lock manager). In order to produce this behavior, an indication of whether or not to transmit the protected data back to the lock manager is needed.) (Figure 2).

As per Claims 12, 17, and 22, Yun discloses a method performed by a lock manager, computer readable medium, and lock manager controlling access to protected data maintained in native storage independent of the lock manager (i.e. *"First, proper home assignment is hard due to migratory behavior of lock protected data."* The preceding text excerpt clearly indicates that a lock manager exists to control access to protected data via a lock, and that the lock protected data is migratory (e.g. it may reside in native storage which is independent of the lock manager).) (Page 528, Column 2, Paragraph 1), wherein the lock manager does not access said protected data from said native storage (i.e. *"We suggest a new lock protocol for HLRC. The main ideas of our protocol are as follows. : Releaser sends diffs for expected pages to be used by acquirer. When a page fault occurs in acquiring process, it applies received diffs for that page instead of fetching a whole page from the home. In this way, our protocol reduces page fault handling time and lock-waiting time."* The preceding text excerpt along with Figure 2 clearly indicates that only the processes requesting the locks gain access to the protected data, and the lock manager determines the order in which processes gain that access.) (Page 528, Column 2, Paragraph 3), the method comprising: receiving locking requests for a lock controlling access to said protected data from a first requester and a second requester (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section."* The preceding text excerpt along with Figure 2 clearly indicates that lock requests are received for controlling access to protected data. Figure 2 illustrates that multiple requesters may be present.) (Figure 2; Page 529, Paragraph 2); sending a first grant message to the first requester, the first grant message not including said protected data (i.e. *"Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt clearly indicates that the protected data/diffs is sent with a grant request after a release. If no release has been made prior to the grant, then the protected data will not be sent along.) (Page 528, Column 2, Paragraph 3), and in response to identifying one or more requesters is waiting for the lock after the first requester, including an indication to return said protected data in the first grant message (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that if the lock request information is received, indicating another process is requesting the lock, that the protected data (e.g. diffs) will be returned. This indicates that an indication to return the protected data was also transmitted.) (Page 529, Paragraph 3); receiving a first release message corresponding to the first grant message for the lock from the first requester, the first release message including said protected data (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the release message includes the protected data (e.g. diffs).) (Page 529, Paragraph 3).

As per Claims 13, 18, and 23, Yun discloses sending a second grant message to the second requester, the second grant message including said protected data (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the protected data is sent in the second grant message.) (Page 529, Paragraph 3), and an indication of whether or not to send said protected data in a second release message (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section...Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt clearly indicates that an indication of the next requestor, if one exists, is sent. This acts as an indication to send the protected data along with the release message.) (Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3).

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/06424

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

As per Claims 14, 19, and 24, Yun discloses the second grant message includes an indication to send said protected data in the second release message in response to identifying another requestor is waiting for access to the lock (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section...Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt along with Figure 2 clearly indicates that if another process is waiting for access to the lock, it is indicated in the grant message, and the protected data (e.g. diffs) are sent with the release message.) (Figure 2; Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3).

As per Claims 15, 20, and 25, Yun discloses the second grant message includes an indication not to send said protected data in the second release message in response to identifying another requestor is not waiting for access to the lock (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section...Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt along with Figure 2 clearly indicates that if another process is not waiting for the lock, another lock request will not be present in the grant message, and the protected data will be stored instead of sent with the release message.) (Figure 2; Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3).

As per Claims 16, 21, and 26, Yun discloses the second grant message includes an indication not to send said protected data in the second release message (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section...Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt along with Figure 2 clearly indicates that if another process is not waiting for the lock, another lock request will not be present in the grant message.) (Figure 2; Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3); and the method comprises in response to said indication not to send said protected data in the second release message, the second requester storing said protected data and not including said protected data in the second release message (i.e. Figure 2 clearly indicates that if no other process is requesting the lock on the protected data, the protected data is stored, and it is not included in the release message.) (Figure 2).